OAK RIDGE NATIONAL LABORATORY
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Smart Pumping Control for Hydronic Distribution Systems

Disclosure Number

201403380

Technology Summary

The invention relates to HVAC systems and more specifically to a control system and method for optimizing the energy usage of such HVAC systems. A new control method for variable speed pumps in hydronic distribution systems is disclosed. This new control method enables a pump to provide only the needed flow rate to each individual device with minimum head loss. It calculates the needed flow rate using a virtual sensing technique, predicts the required pumping head for delivering the needed flow based on the self-learned hydronic characteristics of the distribution system; monitors the heat transfer performance of each terminal unit; and fine-tune the pumping head dynamically by adjusting the pump speed to ensure sufficient flow is delivered to each terminal unit.

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